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SCHWEIZERISCHE EIDGENOSSENSCHAFT
CONFÉDÉRATION SUISSE
CONFEDERAZIONE SVIZZERA

1B00/244

REC'D	10 APR 2000
WIPO	PCT

Bescheinigung

Die beiliegenden Akten stimmen mit den Eintragungen im schweizerischen Muster- und Modellregister überein.

Attestation

Les documents ci-joints sont conformes aux inscriptions du registre suisse des dessins et modèles.

Attestazione

I documenti uniti sono conformi alle iscrizioni del registro svizzero dei disegni e modelli.

Certificate

The attached copies correspond to the registrations in the Swiss Register of Industrial Designs.

Bern, 28. März 2000

Eidgenössisches Institut für Geistiges Eigentum
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Istituto Federale della Proprietà Intellettuale
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Muster und Modelle
Dessins et modèles
Disegni e modelli
Industrial design

B. Schiesser

PRIORITY DOCUMENT
SUBMITTED OR TRANSMITTED IN
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D

Demande de dépôt pour dessins et modèles industriels

1 Déposant/e

Prénom, nom, resp. raison sociale, adresse, numéro postal, localité
(raison sociale selon inscription au registre du commerce).

Eberhard & Co S.A.; Manufacture d'Horlogerie
Rue du Jura 34
2500 Bienne 3

2 Mandataire

Nom, resp. raison sociale, adresse, numéro postal, localité.

3 Auteur

A ne remplir que si la personne qui dépose n'est pas elle-même l'auteur/e:
prénom, nom, localité.

4 Nombre

des dessins ou modèles déposés

.....1..... dessin(s) ☒ ouvert ☐ en nature
..... modèle(s) ☐ cacheté ☒ en reproduction

5 Désignation

de l'objet ou des objets

cadran

6a Priorité

Pays et date du premier dépôt:

6b Immunité dérivée d'une exposition

Nom et lieu de l'exposition. Jour d'ouverture de l'exposition,
resp. jour de la première divulgation du dessin ou modèle
pendant l'exposition, lorsque ce jour ne coïncide pas avec le
jour d'ouverture:

7 Date et signature

Le verso doit aussi être rempli et le formulaire remis en deux exemplaires!

13.09.99

Andreas Franke
EBERHARD & CO S.A.

Certificat de dépôt (laisser en blanc!)

Classe(s) 10-07

No 126349

Ce dépôt a été inscrit aujourd'hui
au registre des dessins et modèles
industriels.

Date de dépôt:

3003 Berne, le 27 SEP. 1999

15 SEP. 1999

Institut Fédéral de la Propriété Intellectuelle

La taxe pour la période suivante
de protection sera échue le

15 SEP. 2004

B. Schlessner

B. Schlessner

Extrait du registre - Dessin et modèle CH

Extrait et état au : 28 mars 2000
Dessin et modèle no : 126349
Date de publication : 15 octobre 1999
Date de délivrance : 27 septembre 1999
Date de dépôt : 15 septembre 1999

cadran

Taxes

1ère période de protection payée jusqu'au 15.09.2004

Déposant/e

Eberhard et Co S.A.
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Désignation de l'objet

cadran

Classe/s

10-07

Mode de dépôt

dessin

Nombre des dessins et modèles

1

Forme de dépôt

ouvert

Objet déposé

en reproduction

Numéro d'ordre

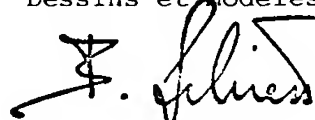
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28 mars 2000

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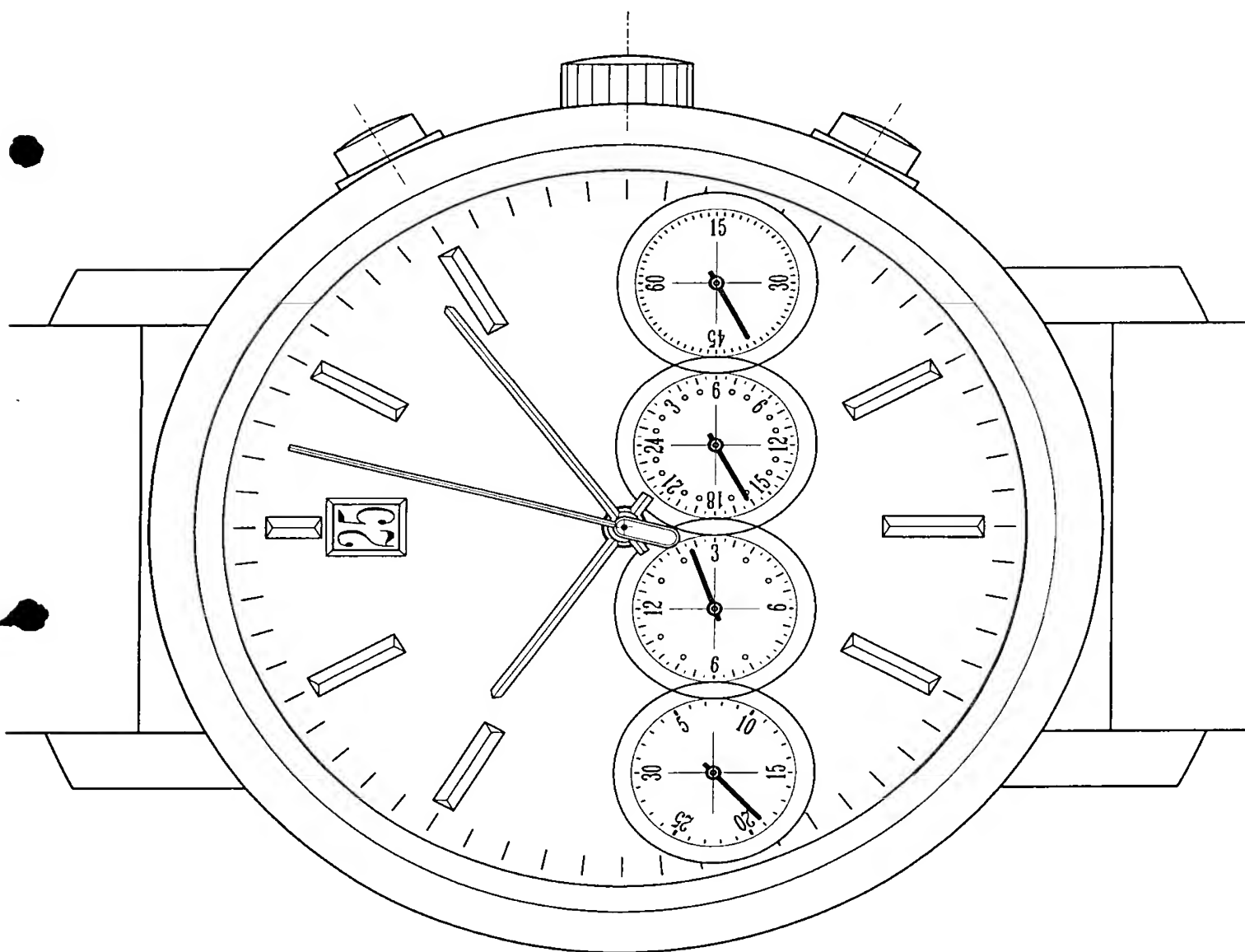
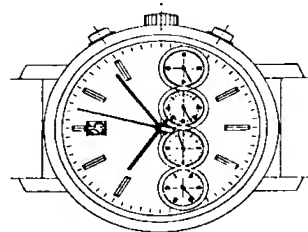
No d'enregistrement: 126349

Dessins et modèles


Beat Schüssler

Dessin No 1

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BACKGROUND TO THE INVENTION

THIS invention relates to a ladder fender.

Ladder fenders, which integrate the functions of a ladder and fender in a single unit, are typically used in quayside applications. In such applications the ladder fender is mounted vertically to extend down the vertical face of a quayside to provide for personnel access and to serve as an impact absorbing fender for vessels approaching the quayside or moored there.

In known ladder fenders steel components of the ladder are moulded into the rubber of the fender. This type of construction has been found to be unsatisfactory because vessel-applied impacts on the ladder fender and consequent bending and flexing thereof can cause premature ladder and/or fender failure.

The present invention seeks to provide an alternative ladder fender.

SUMMARY OF THE INVENTION

A ladder fender according to the present invention comprises a ladder having one or more stringers with rungs transverse to the stringer(s) and at least one hollow, tubular fender structure which is penetrated transversely by the rungs and of resilient material, there being no bond between the fender structure and the ladder whereby the fender structure is capable of at least limited resilient flexure relative to and independent of the ladder.

In one version of the invention, the stringer(s) extend longitudinally through the fender structure(s) and the rungs extend through transverse openings in the fender structure(s). In another version stringers are located on opposite sides of a fender structure with the rungs extending transversely through the fender structure between the stringers.

In both versions it is preferred that the fender structure comprise a plurality of hollow cylindrical fender elements arranged coaxially and in end to end relationship.

Typically, the stringer(s) are threaded through openings in the rungs, and each stringer may have a suspension loop at its operatively upper end by means of which it can be suspended from a supporting structure on a quay so as to hang vertically adjacent the quayside.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described in more detail, by way of example only, with reference to the accompanying drawings in which:

- Figure 1** shows a partly sectioned side view of a ladder fender according to this invention;
- Figure 2** diagrammatically illustrates how the ladder fender of Figure 1 is suspended in use; and
- Figure 3** shows a sectioned side view of another ladder fender according to this invention.

DESCRIPTION OF THE ILLUSTRATED EMBODIMENTS

The fender ladder 10 seen in Figure 1 has an elongate ladder including a pair of parallel stringers 12 with a series of spaced rungs 14 extending transversely between the stringers, and a pair of fender structures 16.

The stringers 12 are slender stainless steel bars and are fitted with eyes 18 at their upper ends. The rungs are stainless steel tubes formed with vertical openings 20 towards their opposite ends through which the stringers 12 are threaded. Each rung is also formed with further vertical openings 22, adjacent the openings 20, to take vertical locating pins 24 as described below.

Each fender structure 16 is composed of fender elements 26. Each fender element 26 is a hollow tubular member made of a resilient material such as rubber. The elements 26 are arranged end to end to form the illustrated, elongate, hollow, tubular fender structure. They are maintained in coaxial alignment by hollow cylindrical alignment elements 28 fitting snugly in the ends of the fender elements and locating partially in one element and partially in the next.

Each fender element 26 is formed with two diametrically extending openings 30 which intersect the central bore thereof. The ends of the rungs 14 penetrate the fender elements through these openings and extend into the central hollows of the fender elements. The stringers 12 pass vertically through the fender structures and are threaded through the openings 20. The lower ends of the stringers are threaded to take nuts 32 beneath the lowest rung 14.

Between the fender structures 16 the tread portions 34 of the rungs are encased in rubber to provide a non-slip characteristic.

There is no bond between the fender structures and the components of the ladder, i.e. the stringers and rungs. The stringers pass loosely through the fender elements 26 and the alignment elements 28 and the rungs likewise pass loosely through the openings 30. The ends of the rungs are located with respect to the fender elements by means of the vertical locating pins 24 which, as mentioned previously, are inserted in the openings 22. In the absence of bonding between the steel ladder components and the rubber or rubber-based fender structures, it will be understood that the ladder and fender structures are capable of moving slightly relative to one another.

In use, the ladder fender 10 is suspended vertically at a quayside. This is illustrated in Figure 2 in which the numeral 36 indicates the vertical quayside wall and the numeral 38 the horizontal quay surface. An arched hand-rail 40 is secured to a structure 42 which has portions 44 projecting out over the quayside as illustrated. The eyes 18 of the stringers 12 are located over hooks at the ends of the projecting portions 44 so that the ladder fender can hang vertically with the fender structures, at rest, lying against the quayside wall 36.

In Figure 3, which illustrates another embodiment 46 of the invention, components corresponding to those in Figure 1 are indicated with the same reference numerals. In this embodiment, which is suspended at the quayside in the same manner as the ladder of Figure 1, there is a single fender structure 16 located centrally between the stringers 12. The rungs 14 extend diametrically through the fender elements of the fender structure and are located with respect thereto by pairs of locating pins 24 inserted in vertical openings in the rungs, within the fender structure, as illustrated. The outer tread portions 34 of the rungs are rubber coated to reduce slippage.

It will be appreciated that the fender structure(s) 16 have a considerably greater transverse dimension, in a direction normal to the quayside wall, than the ladder itself. As a result, the fender structures are able to serve a normal fender function to absorb impacts from vessels approaching or moored at the quayside, thereby protecting the quayside and ladder as well as the vessel itself from damage.


When compared to conventional ladder fenders the illustrated embodiments have the important advantage that resilient components of the fender structure(s) and the rigid components of the ladder are not firmly bonded or otherwise connected to one another. If the fender structure is impacted by a vessel the resilient components can deform to absorb the impact forces without transferring undue loads to the rigid components. It is accordingly envisaged that ladder fenders of the invention will be less prone to failure than currently known ladder fenders.

It will also be understood that, should damage occur, individual fender elements 26, strings 12 and rungs 14 can be replaced without undue difficulty.

A further advantage of the illustrated embodiments arises from the manner in which they are suspended at the quayside, allowing them to swing relatively freely if impacted upon. This is in contrast to conventional ladder fenders which are rigidly bolted or otherwise fixed to the vertical quayside wall.

In another embodiment of the invention, not illustrated, there is a single stringer passing vertically through a single fender structure similar to those described above, with a series of rungs through which the stringer is threaded centrally. The rungs penetrate diametrically through the fender structure with free, outer ends of the rungs on either side of the fender structure serving as treads. As in the previous embodiments, there is no bond between the fender structure and stringers and rungs of the ladder. This embodiment is however less preferred since the freely projecting ends of the rungs are exposed to potential impact damage.

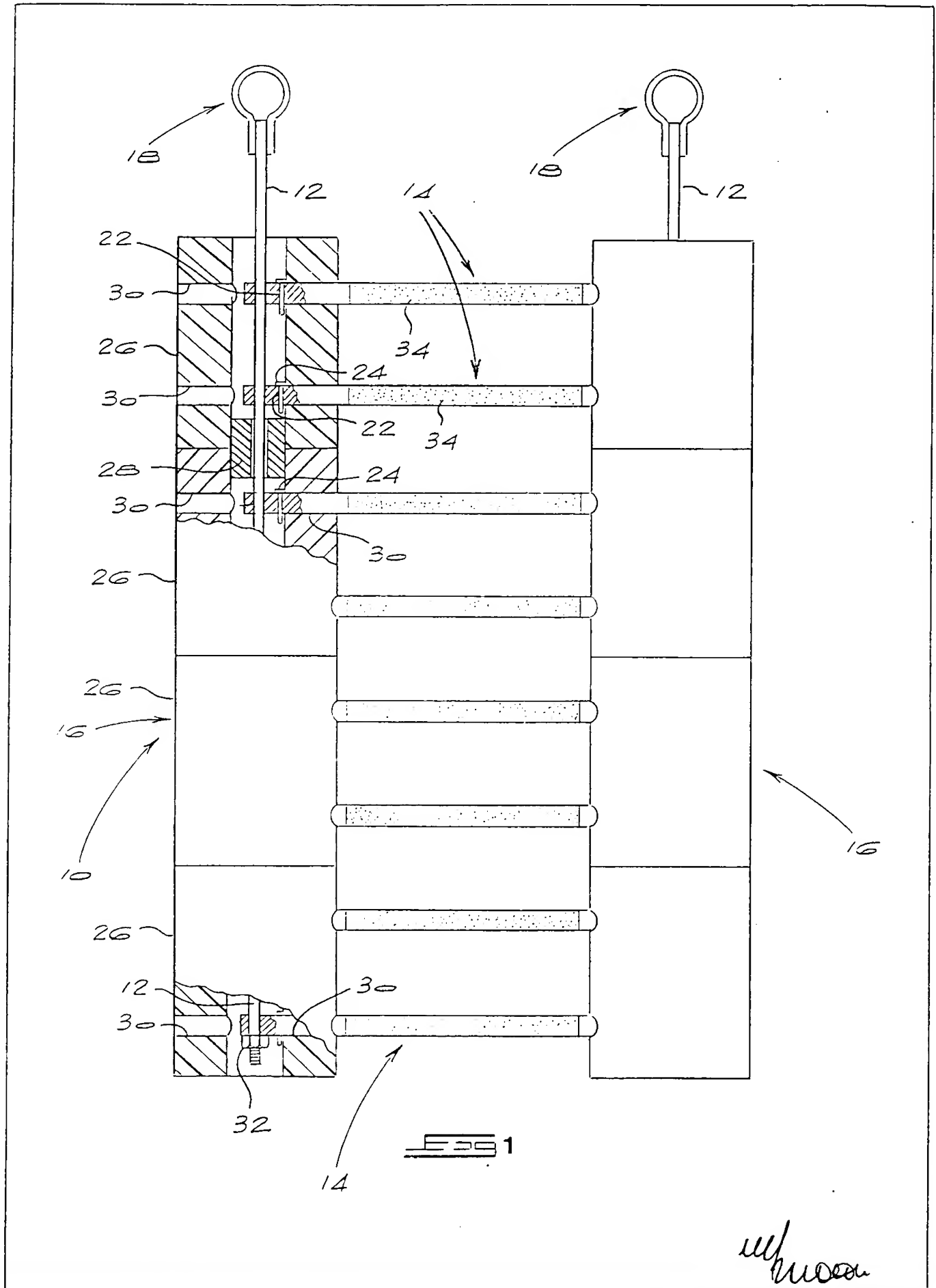
DATED THIS 14TH DAY OF SEPTEMBER 1999


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SPOOR AND FISHER

APPLICANT'S PATENT ATTORNEYS

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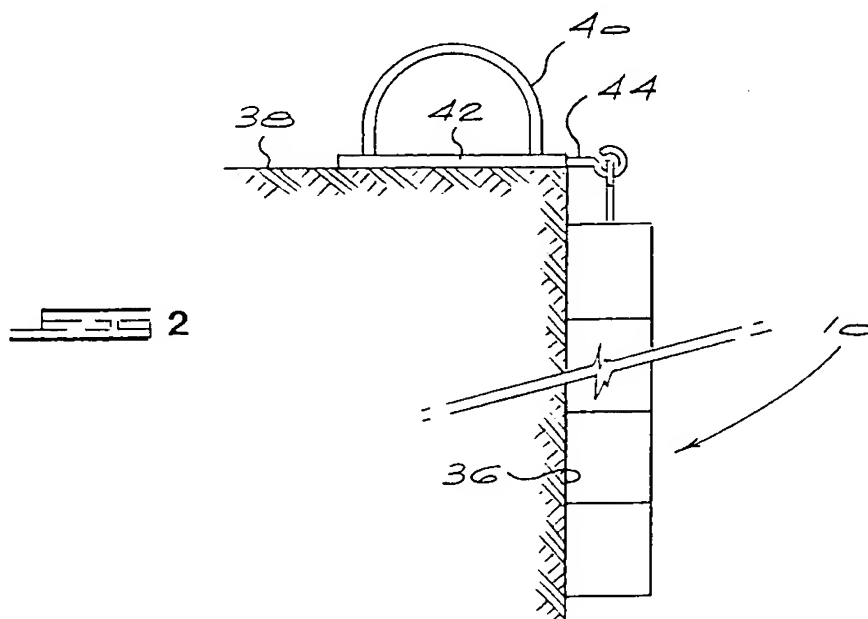


Fig. 3

